ROANOKE (STAUNTON) RIVER PCB TMDL 2005 MONITORING

VIRTUAL FISH METHODOLOGY

LIPID-CONTAINING VIRTUAL FISH REPRESENT AN INNOVATIVE PASSIVE SAMPLING TECHNOLOGY FOR MONITORING AND ASSESSING TRACE LEVELS OF HYDROPHOBIC ORGANIC CONTAMINANTS, INCLUDING PCBS. THE VIRTUAL FISH IS CONSTRUCTED FROM LAYFLAT TUBING OF LOW-DENSITY POLYETHYLENE (LDPE). ONLY DISSOLVED (READILY BIOAVAILABLE) ORGANIC CONTAMINANTS DIFFUSE THROUGH THE MEMBRANE AND ARE CONCENTRATED THROUGH TIME. THE OBJECTIVE OF THE VIRTUAL FISH MONITORING IS THE COLLECTION OF WATER COLUMN CONCENTRATIONS OF PCBS IN ORDER TO ASSESS CURRENT WATER QUALITY CONDITIONS AND AID IN THE IDENTIFICATION OF CURRENT SOURCES.

TOTAL PCB
VIRGINIA HUMAN HEALTH CRITERIA = 1700 PG/L
(PICOGRAM = ONE QUADTRILLIONTH OF A

HIGH RESOLUTION-LOW DETECTION METHODOLOGY FOR WATER COLUMN AND EFFLUENT SAMPLES

HIGH RESOLUTION-LOW DETECTION SAMPLING INCORPORATES EPA ANALYTICAL METHOD 1668A. METHOD 1668 WAS DEVELOPED BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY'S (EPA'S) OFFICE OF SCIENCE AND TECHNOLOGY FOR CONGENER-SPECIFIC DETERMINATION OF THE POLYCHLORINATED BIPHENYL (PCB) CONGENERS DESIGNATED AS TOXIC BY THE WORLD HEALTH ORGANIZATION. REVISION A OF METHOD 1668 HAS BEEN EXPANDED TO INCLUDE CONGENER-SPECIFIC DETERMINATION OF MORE THAN 150 CHLORINATED BIPHENYL (CB) CONGENERS. METHOD 1668A IS APPLICABLE TO AQUEOUS, SOLID, TISSUE, AND MULTI-PHASE MATRICES.

4AROA128.21 - VIRTUAL FISH
NEAR OLD LANE EAST LANDFILL
TOTAL PCBS - 7,221.9 PG/L

4ABOR000.62 - VIRTUAL FISH
BIG OTTER RIVER AT ROUTE 712
TOTAL PCBS - 5,338.5 PG/L

4ROA123.85 - VIRTUAL FISH
OLD MANSION BRIDGE - DOWNSTREAM OF ALTAVISTA
TOTAL PCBS - 1,558.2 PG/L

4AXLN000.00 - VIRTUAL FISH
UNNAMED TRIBUTARY NEAR BGF INDUSTRIES
TOTAL PCBS - 15,642,675.0 PG/L

4AROA090.50 - VIRTUAL FISH
ROUTE 620 DOWNSTREAM OF BROOKNEAL
TOTAL PCBS - 496.7 PG/L

4AROA128.94 - VIRTUAL FISH
NEAR OLD LANE WEST LANDFILL
TOTAL PCBS - 3,672.2 PG/L

4AROA067.91 - VIRTUAL FISH
ROUTE 746 NEAR RANDOLPH
TOTAL PCBS - 74,309.2 PG/L

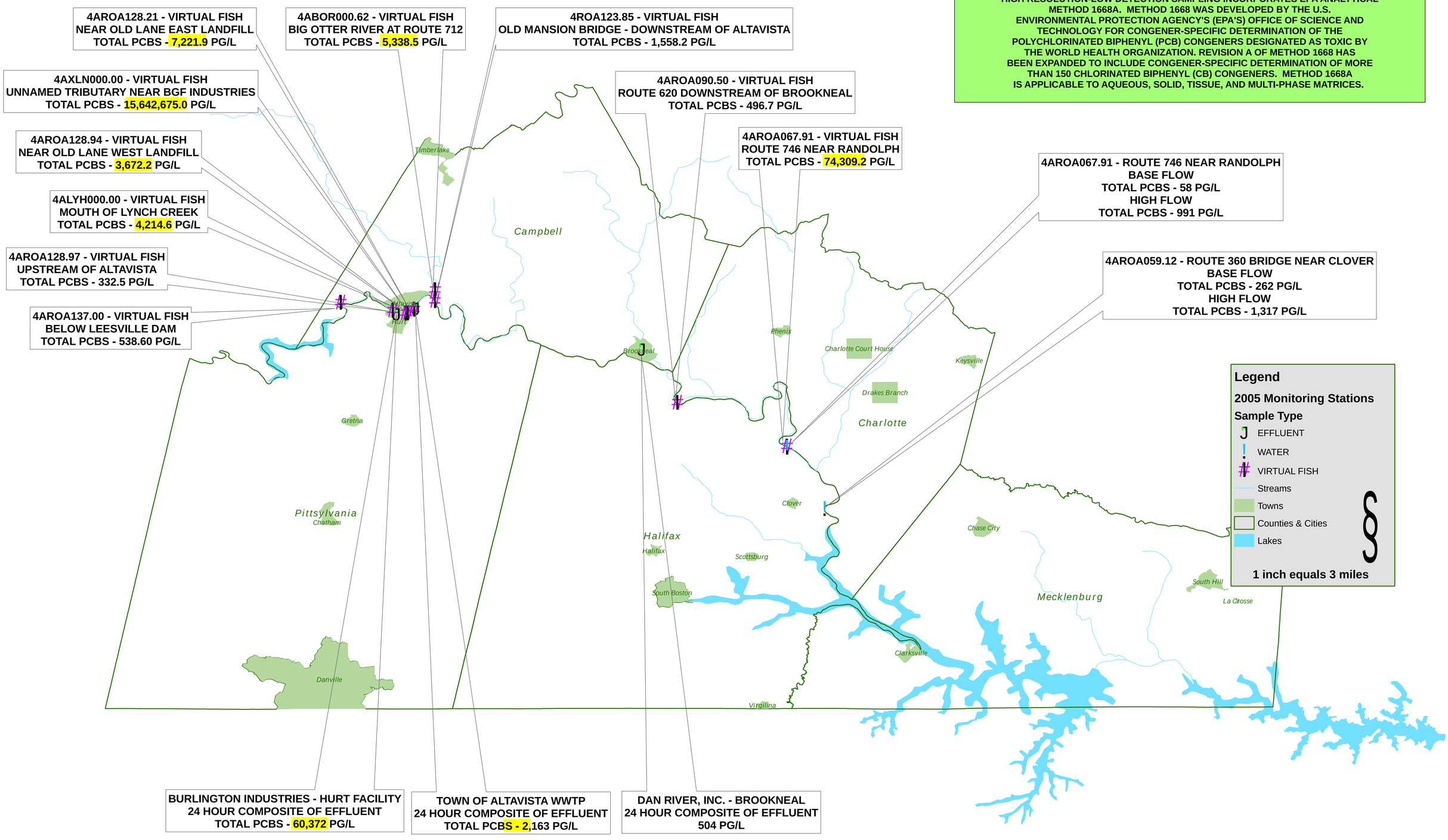
4ALYH000.00 - VIRTUAL FISH
MOUTH OF LYNCH CREEK
TOTAL PCBS - 4,214.6 PG/L

4AROA128.97 - VIRTUAL FISH
UPSTREAM OF ALTAVISTA
TOTAL PCBS - 332.5 PG/L

4AROA137.00 - VIRTUAL FISH
BELOW LEESVILLE DAM
TOTAL PCBS - 538.60 PG/L

4AROA067.91 - ROUTE 746 NEAR RANDOLPH
BASE FLOW
TOTAL PCBS - 58 PG/L
HIGH FLOW
TOTAL PCBS - 991 PG/L

4AROA059.12 - ROUTE 360 BRIDGE NEAR CLOVER
BASE FLOW
TOTAL PCBS - 262 PG/L
HIGH FLOW
TOTAL PCBS - 1,317 PG/L



Legend

2005 Monitoring Stations

Sample Type

- J EFFLUENT
- ! WATER
- # VIRTUAL FISH
- Streams
- Towns
- Counties & Cities
- Lakes

1 inch equals 3 miles

BURLINGTON INDUSTRIES - HURT FACILITY
24 HOUR COMPOSITE OF EFFLUENT
TOTAL PCBS - 60,372 PG/L

TOWN OF ALTAVISTA WWTP
24 HOUR COMPOSITE OF EFFLUENT
TOTAL PCBS - 2,163 PG/L

DAN RIVER, INC. - BROOKNEAL
24 HOUR COMPOSITE OF EFFLUENT
504 PG/L